

CLAIMS

5 What is claimed is:

1. A vane cluster comprising:

10 An inner platform including an inner endwall surface and an inboard cavity;

An outer platform including an outer endwall surface and an outer cavity wherein said outer platform is spaced radially
15 outboard of said inner platform and said outer endwall surface faces said inner endwall surface;

At least two airfoils spanning between said inner and outer endwall surfaces, each including a concave surface, a
20 convex surface, a leading edge and a trailing edge located axially rearward of said leading edge, wherein said concave and convex surfaces of adjacent airfoils face each other;

A duct bounded by said adjacent concave and convex
25 surfaces and said inner and outer endwall surfaces;

At least one hole including an inlet cross sectional area and an outlet cross sectional area; and

30 wherein said at least one hole outlet cross sectional area is located on said duct boundary.

2. A vane cluster comprising:

5 An inner platform including an inner endwall surface and
an inboard cavity;

10 An outer platform including an outer endwall surface and
an outer cavity wherein said outer platform is spaced radially
outboard of said inner platform and said outer endwall surface
faces said inner endwall surface;

15 At least two airfoils spanning between said inner and
outer endwall surfaces, each including a concave surface, a
convex surface, a leading edge and a trailing edge located
axially rearward of said leading edge, wherein said concave
and convex surfaces of adjacent airfoils face each other;

20 A duct bounded by said adjacent concave and convex
surfaces and said inner and outer endwall surfaces;

 At least one hole including an inlet cross sectional area
and an outlet cross sectional area; and

25 wherein said at least one hole is not visible when viewed from
a location external of said duct region.

3. The vane cluster of claim 2 wherein said external location is
axially rearward of said trailing edges.

4. The vane cluster of claim 2 wherein said external location is axially forward of said leading edges.

5 5. A vane cluster comprising:

An inner platform including an inner endwall surface and an inboard cavity;

10 An outer platform including an outer endwall surface and an outer cavity wherein said outer platform is spaced radially outboard of said inner platform and said outer endwall surface faces said inner endwall surface;

15 At least two airfoils spanning between said inner and outer endwall surfaces, each including a concave surface, a convex surface, a leading edge and a trailing edge located axially rearward of said leading edge, wherein said concave and convex surfaces of adjacent airfoils face each other;

20 A duct bounded by said adjacent concave and convex surfaces and said inner and outer endwall surfaces;

25 A duct inlet area bounded by said at least two airfoil leading edges, said inner endwall surface and said outer endwall surface;

A duct outlet area bounded by said at least two airfoil trailing edges, said inner endwall surface and said outer endwall surface;

At least one hole including an inlet cross sectional area, an outlet cross sectional area, a bore extending between said inlet and said outlet areas wherein said bore has a central, longitudinal axis; and

Wherein said at least one outlet cross sectional area is located on said duct boundary and said at least one inlet cross sectional area is not visible when viewed along said longitudinal axis from an external location.

6. The vane cluster of claim 5 wherein said external location is located forward of said duct inlet area.

7. The vane cluster of claim 5 wherein said external location is located rearward of said duct outlet area.

8. The vane cluster of claim 5 further comprising at least one hollow passage, extending through an airfoil, said at least one hollow passage, communicating with said inboard and outboard cavities and forming an internal airfoil surface.

9. The vane cluster of claim 8 wherein said at least one hole inlet cross sectional area is located on said internal airfoil surface.

10. The vane cluster of claim 9 wherein said at least one hole is formed using an electrodischarge machine method.

11. The vane cluster of claim 10 wherein said at least one hole outlet cross sectional area is circular shaped.